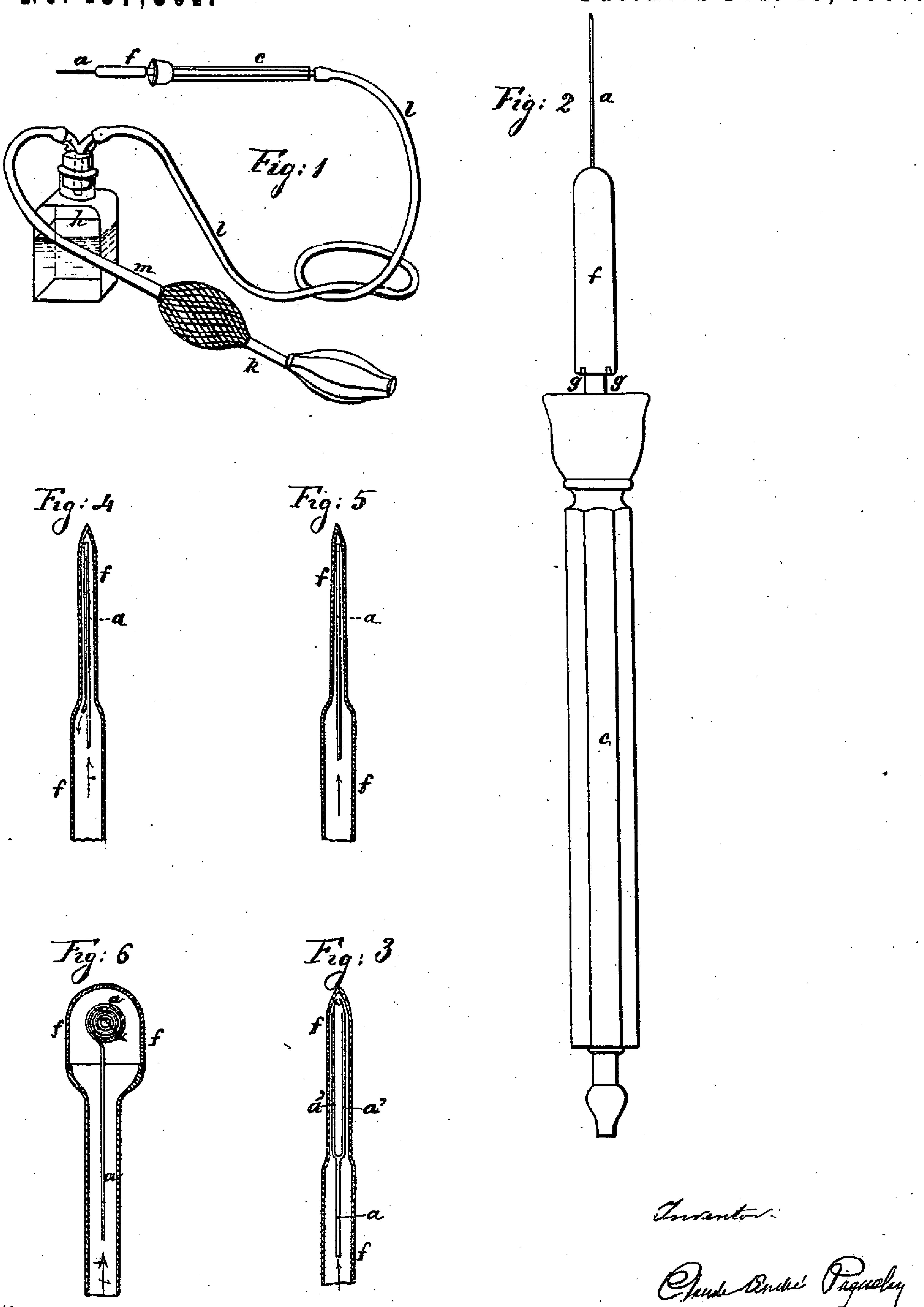
C. A. PAQUELIN.

CAUTERIZING APPARATUS.

No. 187,301. Patented Feb. 13, 1877.



Witnesses

Inventor

Claude André Paquelin

A. v. Briesen

attorney

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CLAUDE A. PAQUELIN, OF PARIS, FRANCE.

IMPROVEMENT IN CAUTERIZING APPARATUS.

Specification forming part of Letters Patent No. **187,301**, dated February 13, 1877; application filed August 22, 1876.

To all whom it may concern:

Be it known that I, CLAUDE ANDRÉ PAQUELIN, of Paris, France, doctor, have invented a system of apparatus of combustion for the instantaneous production of high temperatures, and its various applications; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed sheet of drawings, making a part of the same.

This invention relates to an improved means of instantaneously producing a high degree of heat, and maintaining the same with or without light, by the combination of combustible gases or vapors with gaseous supporters of combustion.

The invention is intended as an improvement of the device described in Patent No. 180,155; and consists, principally, in combining, with the hollow combustion-chamber, a tube of which both ends terminate within said chamber. The tube or hollow body may be of various forms and dimensions, and provided with one or several orifices, for the admission of the combustible mixture, and the exit of the products of combustion. To determine this combustion, the tube or conduit, first heated in the flame of a candle, for instance, and the gaseous mixture, is then passed through it by means of a flexible ball, the platinum, when once raised to a certain temperature, determining and maintaining the combination of the gaseous mixture. This mixture may be composed of air and the vapor of mineral essence, or any other mixture of combustible vapors and gaseous supporters of combustion. The tube may be straight or curved, or of other form, or a number of tubular or hollow bodies may be combined or connected together in various ways to effect the desired object, and the apparatus may be differently arranged, according to the purpose to which it is to be applied, and I may introduce platinum or other similar metal, in the form of wire, wire-cloth, fragments, or other divided form, into the tubular hollow body, and the latter may be wholly or partly inclosed in a metallic or other hollow envelope or casing. The internal surface, also, of the tubular or hollow body may be either plain or corrugated, ribbed, or otherwise roughened, as likewise the external surface. The mixture or gas may be supplied by one or more forcing or exhausting apparatus, working either intermittently or constantly.

In the accompanying drawings I have shown the invention as applied, by way of example, to several forms of the surgical instrument known as "Dr. Paquelin's thermo-cauter."

Figure 1 shows a general view of the apparatus complete, the medium by which the combustion is determined, and the body of the lancet, consisting, in this instance, of a projecting tube, which is bent or doubled back upon itself, as seen more clearly in Fig. 2, which shows an elevation of the thermo-cauter proper, drawn on a larger scale.

The same letters of reference serve for the first three figures.

The tube *a* is of platinum, or other metal having similar properties. Its external surface constitutes the cauterizing part or lancet of the instrument, and it is within this tube that the combustion of the gaseous mixture is effected. The tube *a* is or may be connected to, and forms a prolongation of, a tube, *b*, by which the gaseous mixture is supplied. The tube *b*, which may be made of copper or other material, screws into a hollow handle, *c*, an annular space, *d*, being left between them for the passage of a current of air to cool the pipe *b*; the products of combustion escape from tube *a*, by the orifice *e*, into a chamber, *f*, which incloses the base of the tube *a*, leaving its cauterizing or lancet part exposed, and from the chamber *f* they escape by openings *g g* at the rear end. *h*, small bottle containing the liquid hydrocarbon, to the neck of which may be attached a double hook for hanging the bottle to a button-hole, coat-button, or pocket, or in other convenient position. The bottle is closed by an india-rubber stopper, in which are inserted two metal tubes, *i j*. The tube *i* receives atmospheric air from a flexible ball, *k*, while tube *j* conveys the air saturated with the hydrocarbon vapors to the instrument. The hydrocarbon which gives the best results is that commonly known as "mineral oil;" but alcohol heated in a water-bath, or, preferably, wood-spirit, may be used in the same manner as the mineral oil. *l m* are

tubes of stout india-rubber, connecting the three parts of the apparatus.

Fig. 4 shows the combustion-tube *a* bent back upon itself, as before, but entirely inclosed within an enveloping but hollow or tubular chamber or sheath, *f*, whose external surface forms, in this case, the cauterizing part of the instrument.

In Fig. 5 the combustion-tube *a* is not bent, as before, but entirely straight, and is also inclosed in a sheath, *f*, as in the last case.

In Fig. 6 the combustion-tube *a* is of spiral form, inclosed within a chamber, *f*, which is of a form suitable for a uterine cauter.

In Fig. 3 the tube *a* is bifurcated or composed of two branches, *a' a'*, inclosed in a chamber, *f*.

It will be evident from the above that the form of the combustion-chamber, or medium by which combustion is effected, may be indefinitely varied.

I claim as my invention—

The combination of the combustion-tube *a* with the sheath *f*, within which both ends of said tube terminate, substantially as herein shown and described.

CLAUDE ANDRÉ PAQUELIN.

Witnesses:

ROBT. M. HOOPER,

FELIX ORET.